

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

WEATHER SUMMARY FOR APRIL 1888.

Over the greater part of India April was a hot and dry month. The thunderstorms, nor-westers, and duststorms which in normal years are so frequent over a large part of the country, were during the past month much less numerous than usual, and the rainfall in the great majority of districts was much below the normal average. But the few storms which did occur were unusually violent, as though the energy which is ordinarily distributed through numerous small storms was, in the case of the present month, collected in the one or two storms which did occur. The tornado at Dacca on the 7th, and the violent nor-wester in the Moradabad neighbourhood at the close of the month, are examples of this concentration of energy. The earlier part of the month was much more settled generally than the latter. Between the 1st and the 16th any rain which occurred was light and fell in the form of scattered showers, but about the 17th unusually strong winds set in around the head of the Bay, and poured an abnormally large amount of moisture into Bengal and Assam, and from that date onward to the close of the month rain fell daily, and at times heavily, over the whole of North-Eastern India.

In the Peninsula thunderstorms generally occasioning only slight rain occurred frequently between the 12th and the end of the month, the most unsettled days being the 15th and 20th, when rain fell over a very large area.

On the 1st the Chart showed a large area of relatively low pressure overlying the Gangetic plain and the Central parts of the country. From this area pressure increased in all directions, and was relatively high in Upper Assam, in Arakan, in Mysore, and in the extreme north-west of the Punjab. The differences were not however large, and the wind movement was generally light. Temperature had fallen since the preceding day, and the maxima reported, though high, were not abnormally so for the season. The highest maxima were 108° at Kurnool, and 107° at Sholapur and Cuddapah. Rain was falling in Assam. On the 2nd there was apparently unsettled weather over the North-West Himalayas, under the influence of which slight rain had fallen at the sub-montane stations of the Punjab. Barometric gradients had increased and the winds were somewhat stronger, but the general weather showed but little alteration. Temperature had continued to fall very generally, but the day temperatures were higher than on the 1st, Khandwa reporting a maximum of 113° , and Amrohi and Allahabad of 107° . On the 3rd the area of lowest pressure was transferred to North and Central Bengal, and the barometer had risen over the greater part of North-Western India. Beyond local showers, there was no rain of importance, and the weather was of the normal hot weather character. The Deccan remained the hottest part of the Indian region. During the 4th and 5th the lowest barometer continued to be reported from North Bengal, and unsettled weather prevailed in Assam, and probably on the Sikkim Himalayas. The distribution of temperature and the maxima were generally unchanged. On the 6th a well defined depression appeared over the Punjab, and was accompanied by strong winds and duststorms in its immediate neighbourhood. It, however, occasioned no permanent change in the general conditions, as on the following day, the 7th, pressure was again lowest over North Bengal. The weather at 9 A. M. was generally fine and bright, and hardly any rain was reported. In the evening of this day a tornado passed over Dacca, the particulars of which, so far as they are known, will be found at the end of the Summary. On the 8th, the barometer was low all along the line of the hills and highest in Mysore. North-westerly and westerly winds prevailed over the greater part of India, and southerly winds over the Bay and Bengal. Cloudy weather was reported from Burma, Assam, and the south of the Peninsula. Between the 9th and the 13th there was practically no change in the weather. Temperature slowly rose, and the indraught of southerly winds from the Bay into Bengal and Assam steadily continued. On the 14th a low barometer of depression appeared off the South Coromandel Coast, and caused the wind to shift to the northward at Madras, Negapatam, Salem, and Trichinopoly. It gave rain to several stations in south Madras, and this rainfall subsequently extended to all parts of the South of the Peninsula. The depression did not, however, develop, and during the 16th and 17th, the distribution of pressure was the same as that prevailing before the appearance of the disturbance viz., high in the South and South-West and low over Northern India, more particularly along the foot of the hills and in Bengal. On the 18th rain began to fall in the South, Colombo receiving as much as 4 inches, and on the following days, the 19th and 20th, rain was very general throughout the Peninsula. Colombo on the 20th again reported 6 inches. On the 21st rain almost ceased in the Peninsula, but began to fall generally in Assam and Bengal, and this rainfall continued in North-Eastern India until the close of the month. On the 23rd and 24th considerable disturbance occurred over North-Western India, and a large number of duststorms, in some places accompanied with rain, were reported from the Punjab, North-Western Provinces, Rajputana, and Central India. After this burst of unsettled weather there occurred a period of low relative temperature followed by conditions, such as are usually characteristic of the hot weather, and temperature rose steadily. At the close of the month dust and thunderstorms again occurred, and on the evening of the 30th a storm apparently descended from the hills in the neighbourhood of Mussoorie, and travelled across the western part of the North-Western Provinces. The particulars of this storm will appear in the May Summary.

The mean temperature of the month has been below the normal average over Ceylon, the south of the Peninsula, Lower Bengal, and Assam, and above it elsewhere. The greatest excess was in Sind, but all over Upper India, including the North-Western Provinces, Punjab, Rajputana, and Guzerat, the mean temperature was considerably higher than usual. The changes of temperature during the month were large and important; rapid falls over large areas taking place after the occurrence of duststorms, to be succeeded by equally rapid recoveries as the weather settled down to its normal condition. The rise of temperature during the month was by no means excessive as the following table of maxima will show:

Stations.	Maximum on 1st.	Maximum on 15th.	Maximum on 30th.	Stations.	Maximum on 1st.	Maximum on 15th.	Maximum on 30th.
Rangoon	70	100.5	99.0	Colombo	90.0	83.0	89.5
Calcutta	91.5	98.0	91.0	Mangalore	89.3	90.3	90.3
Cuttack	103.9	102.9	106.5	Sholapur	106.7	108.2	108.7
Patna	100.0	104.5	97.0	Bombay	87.4	90.4	88.4
Allahabad	104.6	104.0	105.1	Akola	104.7	107.7	106.7
Jhansi	105.5	103.5	109.5	Nagpur	106.2	107.7	109.7
Roorkee	97.1	98.1	103.6	Deesa	104.4	104.4	108.9
Delhi	99.0	100.0	105.0	Hyderabad	98.7	102.2	106.7
Lahore	91.1	97.6	101.6	Jaypora	100.6	98.6	106.6
Multan	94.6	98.8	104.6	Secunderabad	105.7	99.7	107.8
Simla	65.7	72.5	72.5	Madras	90.5	89.0	92.0
Quetta	58.6	77.9	77.4	Madura	103.5	87.3	106.0

and the maximum readings over a large part of the country were about the average.

Rainfall.—The comparatively constant rain which fell over North-Eastern India during the latter part of the month occasioned an excess of rain in the Provinces of Bengal and Assam. A slight excess was also reported from Rajputana and Central India, from the Korkan and from the Dacca, and a large excess from Ceylon. No rain fell in Sind, Cutch, or Guzerat, and generally outside those regions reporting an excess the rainfall of the whole month was very trifling.

The Dacca Tornado.—The following remarks are compiled from the reports furnished by Dr. Crombie and Mr. Hare, who were both in Dacca during the tornado. At about 7 o'clock on the evening of Saturday, the 7th April the tornado struck the western extremity of the town of Dacca. Even in its first manifestations the storm was of great violence, and the rotatory movement of the wind within the storm area was evidenced by the directions in which plantain and other trees were found lying, after the storm had passed. The appearances before the storm burst were only such as usually accompany the approach of an ordinary north-wester. The vortex travelled at first on a south-east course along the old river bed, destroying every hut within its area, and it was hoped that the storm would continue to travel in this direction and so pass out into the open Maidan to the south of Nawabgunge, and the destruction due to it be thus reduced to a minimum. Suddenly, however, the centre moved to the northward and subsequently reached the Maidan to the south of Lalbagh. Here, freed from such obstacles as buildings, &c., the storm rapidly increased in energy, and after this short incursion into the open country the tornado, having gained such additional force as enabled it to destroy even the strongest houses, returned to the river. From Lalbagh the vortex crossed the river, and it was after this that the largest amount of damage was done, everything including the strongest masonry houses, being destroyed. The tornado apparently subsequently rose from the ground and passed high into the air.

It travelled altogether about $5\frac{1}{2}$ miles at an estimated rate of 16 miles per hour. Its breadth varied between 200 and 180 paces, and the uprush of air within the centre must have been tremendous, as large beams blown from the falling houses were suspended in mid-air for distinct intervals by the violent uprush. The tornado did not pass over the observatory, so that there was no record of the lateral wind force.

The storm was so partial that those outside its path were hardly aware of anything unusual.

Very shortly after the tornado visited Dacca, a path of the Munshing Sub-Division was visited by a tornado, either the same or another. The damage done by this was very severe, and it is at present reported that 66 deaths occurred, and that 128 persons were wounded. This tornado passed for a great part through open country, and did comparatively little harm to property, though, where it did strike houses, it carried them away more completely than in the crowded city of Dacca.